

CENTRAL INTELLIGENCE AGENCY

PROPOSED OFFICE BUILDING

N-182

LANGLEY, VIRGINIA

TENTATIVE SUBMISSION

OUTLINE SPECIFICATIONS

for

ELECTRICAL WORK

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TENTATIVE SUBMISSION
OUTLINE SPECIFICATIONS
 for
ELECTRICAL WORK

E-01 SCOPE OF WORK

a. All required labor, materials, equipment, and Contractor's services necessary for complete installation of Electrical Work in full conformity with requirements of all Authorities having jurisdiction; all as indicated on drawings and/or herein specified, including in general the following:

1. Electric Service System.
2. Distribution System for building light and power.
3. Lighting fixtures and lamps.
4. Underfloor duct system.
5. Telephone conduit systems.
6. Fire Alarm and Watchmans Report System.
7. Power, control, indicating and alarm wiring for mechanical equipment.
8. Motor control centers.
9. Temporary light and power.
10. Outdoor Lighting.
11. Auditorium Sound System.
12. Clock System.
13. Building Lightning Protection.
14. Standby Generators.
15. Supervisory Alarm System.

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E-1

b. Material and equipment shall be as required by Standards of General Services Administration, Public Buildings Service, Construction Division.

E-02 WORK NOT INCLUDED

- a. Supplying of current transformers and watthour meters for Utility Company's metering.
- b. Supplying and setting of motors.
- c. Supplying of actuating devices for heating, ventilating and air conditioning, plumbing, and alarm equipment.
- d. Elevator work beyond motor-generator set controller.
- e. Public telephone system cables and connections.
- f. Finished patching, and finished painting.
- g. 34.5 kv primary feeders.
- h. Double Ended Master Substation, except as noted.
- i. Fuel supply, exhaust, cooling water and air intake piping systems for diesel generators.
- j. Telephone systems cables and equipment.

E-03 GENERAL ITEMS

a. As-Built Drawings: Record all deviations from contract drawings and deliver to Owner cloth tracings showing work as actually installed.

b. Cutting: All required for Electrical Work.

E-04 ELECTRIC SERVICE SYSTEM

a. Two separate overhead pole lines, 34.5 kv, will be run to main outdoor substation by and at expense of Utility Company.

b. One overhead pole line, 34.5 kv, will be run to main ^{loc} outdoor substation by Utility Company at expense of Owner. Allow \$174,000.00.

c. Main outdoor substation will be furnished by and at the expense of the Utility Company except for the following:

1. Primary tie breaker: Furnished and installed by Utility Company at expense of Owner. Allow \$27,000.00.

2. Automatic-tap-changing-under-load equipment: ?
Furnished and installed by Utility Company at expense of Owner.
Allow \$47,000.00.

3. 7500 kva transformer, including primary disconnecting equipment, 34.5 kv delta primary, 4160 volt grounded wye secondary with primary taps and automatic-tap-changing-under-load equipment: By Contractor. Indicate in budget as a separate item.

4. Power circuit breakers, air, outdoor, 250 mva I.C. 15 kv or 150 mva I.C. 5 kv as required, for transformer secondaries, tie breaker, feeder breakers and generator breakers: By Contractor.

E-05 4160 VOLT DISTRIBUTION SYSTEM

Furnish feeders from Master Substation to air conditioning compressor and chilled water pump motor controllers and motors as indicated.

E-06 13.8 KV DISTRIBUTION SYSTEM

Furnish feeders from Master Substation to unit substations and emergency generators as indicated.

E-07 INCOMING SERVICE, TELEPHONE

Provide duct bank with 4 - 4" concrete covered conduits from property line to Main Building and 2 - 4" concrete covered conduits from manhole outside Power Plant into power plant, as indicated.

E-08 UNIT SUBSTATIONS

Furnish double ended, dry, indoor type, 13.8 kv delta primary, 277/480 volt grounded wye secondary unit substations with associated equipment, sizes and locations as indicated.

E-09 LIGHTING PANELBOARDS

a. 277/480 volt: Circuit breaker type, with "E" frame breakers. Protect all panels with silver-sand fuses in supply mains.

b. 120/208 volt: Circuit breaker type, with "E" frame breakers.

c. Furnish where indicated.

E-10 POWER PANELBOARDS

- a. Convertible circuit breaker type.
- b. Furnish where indicated.

E-11 MOTOR CONTROL CENTERS

Each motor control center will consist of an individual combination circuit breaker and magnetic starter for each motor complete with push buttons and pilot lights, with Cordon-type breakers protecting main motor control center buses. Buses shall be capable of withstanding 25,000 ampere short circuit stresses. Across-the-line starting for all motors 100 hp and smaller. Primary resistance starting for motors larger than 100 hp and smaller than 250 hp. Motors 1/2 hp and larger, 3 phase 440 volt. Motors 1/3 hp and smaller single phase, 120 volt. Furnish motor control center with type C wiring.

E-12 250 HP MOTOR STARTERS

4160 volt, air, indoor, magnetic, combination, full voltage starters with current limiting fuses.

E-13 1500 HP MOTOR STARTERS

4160 volt, metal clad, air, indoor, full voltage circuit breaker type with 150 mva I.C.

13.2 KV motor?

E-14 CONDUIT

a. Threaded galvanized steel. Minimum size: 3/4", except homeruns, 1".

b. 4" fibre or asbestos cement for concrete encasement outdoors underground.

E-15 WIRE AND CABLE

a. 120/208 volt and 277/480 volt, type RH throughout, except in wet locations, RHRW. Minimum size #12, except homeruns longer than 100 feet.

b. 4160 volt: Butyl rubber insulated, neoprene jacketed, 5 kv single conductor shielded, grounded per IPCEA specifications, sizes as indicated.

c. 13.8 kv: Paper-insulated, lead covered, neoprene jacketed, 15 kv single conductor shielded, grounded per IPCEA specifications, sizes as indicated.

E-4

E-16 WALL SWITCHES

20 ampere "L" rated similar to H & H 1991 series (277 volt). Furnish one switch for each one-fourth bay; locate on column adjacent to bay, off centerline of column to clear possible partitions.

Are Elect Code permit breaking 277 volt circuit? Check.

E-17 RECEPTACLES

15 ampere, 120 volt, duplex, grounding type similar to H & H 5262. Furnish one duplex convenience outlet for every 100 square feet.

E-18 DEVICE PLATES

Brushed brass.

E-19 UNDERFLOOR DUCT

25,000 Furnish complete system throughout net usable office space as indicated on drawing E-7, except as noted. System shall be similar to Robertson UKX-18-16 with four cells per unit. For *22,000* *2* *15,000* square feet of net usable office space furnish above system covering entire floor area.

E-20 UNDERFLOOR DUCT SERVICE FITTINGS

Furnish 2100, 120 volt receptacle fittings, 4000 telephone and signal fittings and 100 3 pole 30 ampere receptacle fittings.

E-21 TELEPHONE SERVICE

Two separate systems will be installed. One for interior use and one for outside service. Instruments, cables, wiring, terminals, switchboard and switching equipment will be provided by telephone company. Raceways, outlet boxes, underfloor duct inserts, and terminal cabinets shall be furnished by Contractor.

& Security, Central Room

a. Provide empty conduits from Telephone Equipment Rooms to telephone closets as indicated. Vertical runs of telephone cables in closets will be exposed and run via slots in floor.

b. On each floor provide 36" x 36" x 4" strip boxes, two per each 2400 sq ft of net office area. Connect each strip box to nearest UFD junction box with 2 - 1-1/4" conduits and to UFD by one duct extension.

c. Strip boxes are located in pairs to serve the two telephone systems. Two telephone closets will be located in 17,000 sq ft of net office area. Run one 2" conduit from each strip box to telephone closet in area. Do not connect a pair of strip boxes to same closet. (See dwg 21-56.)

(not required)

telephone

Extra set of cameras?

d. Provide 2 - 2" conduit ties between electric closets of same system on each floor.

E-22 LOCAL TRANSFORMERS

A 120/208 volt distribution system will be required to supply incandescent lighting, floor power, electronic analyzers, kitchen equipment, and other miscellaneous systems. This voltage will be obtained through local dry type transformers with 480 volt primaries, located in unit substation rooms. Total capacity of these transformers shall be 3000 kva.

E-23 FIRE ALARM SYSTEM

a. Equipment will be furnished and installed by A.D.T. Allow \$16,710.00.

b. Furnish conduit and wire for the following system:

1. 10 general alarm circuits and one pre-signal alarm circuit with a two-circuit recorder.

2. Alarm stations and gongs located as follows:

Ground Floor

- 20 stations
- 20 gongs

1st Floor

- 20 stations
- 20 gongs

2nd thru
7th Floors

- 10 stations each floor
- 10 gongs each floor

Penthouse

- 4 stations
- 4 gongs

Basement

- 6 stations
- 6 gongs

3. Twenty-five sprinkler alarm and CO₂ alarm stations.

E-24 WATCHMANS TOUR SYSTEM

a. Furnish wired watchmans report system of the closed circuit supervised type.

b. Stations shall be located in such a manner as to compel watchman to follow designated tour and report at each station within predetermined time limit. Failure to do so shall sound alarm at a central point. Stations shall include an indicator lamp to alert guard to call guard office. Lamps shall be controlled from a central point.

E-6

E-25 AUDITORIUM SOUND SYSTEM

a. Empty conduit and outlet box provision shall be made for an auditorium sound system.

b. System shall utilize multiple speakers for low level area coverage.

E-26 CLOCK SYSTEM

Clock system shall be synchronous automatic self-regulating non-wired (electronic) type consisting of 300 secondary clocks, master clock and necessary transmitters or frequency generators. *located in Control Room? 47-14?*

E-27 TEMPORARY LIGHTING AND POWER

Furnish temporary lighting and power for construction purposes.

E-28 EMERGENCY GENERATORS

a. Furnish two 1500 kw generators, including control and associated equipment. Generator output shall be at 13.8 kv. Contractor shall install, test and make ready for service the generators and associated equipment.

b. Fuel supply, exhaust, cooling water and air intake piping will be furnished under specifications for HVAC.

E-29 LIGHTING SYSTEMS

a. Office Areas: Lighting shall consist of surface mounted 2 lamp fluorescent fixtures 48" long with T-12 rapid start warm white lamps, similar to PBS Standard No. 362-RS. Total number of fixtures to be based on layout indicated on Dwg. E-8. *Will operate on 480V or 277V?*

b. Office Areas: State amount to be added to or deducted from budget price for substitution of recessed fixtures in lieu of surface mtd. Similar to PBS Standard No. 315.

c. Exit Lights: 15 watt, surface mounted, with 4-1/2" ruby glass letters, similar to PBS Standard No. 190.

d. Stair Lighting: Lampholders.

e. Mechanical Spaces: 200 watt RLM reflectors, 100 square feet per fixture.

f. Lobby, Auditorium and Cafeteria: Recessed incandescent 150 watt R 40 lamp. Furnish one for each 25 square feet. Similar to PBS Standard No. 57.

E-7

g. Kitchen: Surface mounted fluorescent, 2 lamp, 40 watt, T-12 rapid start, 48" long, similar to PBS Standard No. 378.

h. Toilets, Lounges and Powder Rooms: Recessed, 2 lamp fluorescent fixtures 48" long with T-12 rapid start warm white lamps. Similar to PBS Standard No. 315. *but socket for rays to provide?*

1. Street and Parking Area Lighting:

1. Cable: Direct burial, single conductor, ozone resisting rubber insulated, neoprene jacketed, and suitable for use with transformer open circuit voltage.

2. Lamps: Incandescent, 10,000 lumens (roads), 15,000 lumens (parking area).

3. Standards: Aluminum (mounting height, 20 ft.).

4. Electrical distribution: Series, 20 amperes.

5. Spacing: Roads, 150 ft; parking area, one fixture per 5,000 square feet.

6. Regulator: Automatic, high power factor, askarel filled, rated 480 volt, 20 ampere, with capacity and location as indicated. Provide protective relay which will automatically disconnect regulator from line on open series circuit. Regulator shall be controlled by fully automatic, electrically operated 480 volt air circuit breaker with 120 volt, 60 cycle control coil and rating as indicated. Circuit breaker shall be equipped with necessary auxiliary contacts and standard attachments, and shall be operated by astronomic electrically wound time switch. Furnish three position "ON-OFF-AUTOMATIC" switch for manual operation of circuit breaker.

E-30 LIGHTNING PROTECTION SYSTEM

a. Provide lightning protection for Boiler House stacks.

b. Provide lightning protection for Main Building including the following:

1. Air terminals on 25 foot centers around periphery of building.

2. Cross ties across building on 50 foot centers with air terminals on 25 foot centers.

3. Down cables on 100 foot centers around periphery of building.

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4. Ground rods at base of each down cable.

5. Cable connection between ground rods to form a complete ground loop.



E-32 SITE PERIMETER AREA LIGHTING

Provide floodlights located on 300 foot centers around periphery of property. Each floodlight location shall consist of four, 500 watt weatherproof heavy duty floodlights mounted on a 50 foot aluminum pole. Floodlighting shall be divided into five zones with individual control at guard house and security center on Ground Floor of Main Building.

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